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LLANGEFNI URBAN DISTRICT COUNCIL.

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ANNUAL REPORT

# of the

Medical Officer of Health

for the year 1925.

J. R. PRYTHERCH, M.B., Ch.B., M.R.C.S., D.P.H.

December, 1926.

Llangefni Urban District Council.

To the Chairman and Members of the
Llangefni Urban District Council.

I beg to submit my annual Report for the year 1925.

Area	2,510 Acres.
Population	1,682 (estimated at June, 1925).
Number of Inhabited Houses	471
Number of Families or Separate Occupiers	471
Rateable Value	£6,533.
Sum represented by Penny Rate ...	£21 (approximately).

Llangefni is a county market town, surrounded by a rural area. The weekly markets are attended by representatives from the whole County. The County School has day and weekly pupils from a large area.

In the rural area are a number of small farms and agriculture is the main feature.

The town area is composed of shops and dwelling houses. As stated above it is a market centre for the County.

VITAL STATISTICS.

	Total.	*Male.*	*Female.*	
Births :—	31			
Legitimate ...	—	14	11	—Birth Rate, 18.44.
Illegitimate ...		4	2	
Deaths	32	15	18	—Death Rate, 19.00

Number of women dying in or in consequence of Child Birth—Nil.

Death of Infants under 1 year—One Female legitimate. R ı [illegible] ✓

Number of cases of Infectious Diseases notified were one Scarlet and two Diphtheria.

The new Isolation Hospital of the County Authority is available and fully utilised.

There was no cause of sickness or invalidity noteworthy during the year.

The Tuberculosis Hospital in the area is available and the T.B. Physicians available for consultations weekly.

Maternity and Child Welfare.—Clinic meets fortnightly and the attendance is fairly good. A medical man and the District Nurses, assisted by voluntary helpers, see the mothers and children. The mothers are given tea and some assistance, such as milk, Glaxo, and Virol distributed at cost or free in necessitous cases. The ignorance of mothers as to infant feeding and clothing is being slowly done away with.

School Clinic.—This is held weekly and Doctor and Nurse apply treatment to minor ailments. In this way many small defects are remedied and contagious and septic conditions speedily dealt with.

There is no Institutional Provision for unmarried mothers, illegitimate infants, and homeless children in the area.

Ambulance Facilities.—(*a*) For Infectious cases one is being provided by the County Council, to be located at the Isolation Hospital. (*b*) For Non-Infectious and accident cases, one available and provided by the County Council.

Public Health Officers of the Local Authority.—One part-time Medical Officer—qualified D.P.H. ; one part-time Surveyor and Sanitary Inspector.

Professional Nursing in the Home.—One Maternity Nurse and one Queen's Nurse—provided by voluntary contributions, assisted by school and other grants.

There is no Midwife practising in the area. The Maternity Nurse above referred to does almost all the cases.

Chemical Work.—Water analysis done by Mr. Lowe, Chester.

SANITARY CIRCUMSTANCES OF THE AREA.

Water.—Insufficiency of supply and defective reservoir. Report of the Consulting Engineer attached.

Rivers and Streams.—The River Cefni runs through the town. Fortunately it is periodically cleansed by floods—it would otherwise be foul from the amount of rubbish which is thrown into it by those whose premises are on the banks.

Drainage.—In the rural area—earth closets. In town, "water carried" to a fairly large extent. Deficiency of water supply prevents taking active steps to abolish the closet or pail system which is prevalent in parts. Details are given in the Sanitary Inspector's Report.

Scavenging.—Weekly removal of house refuse to a dump. No proper receptacles provided though frequently urged to do so.

Housing Statistics.

Number of new houses erected during the year :—

(*a*) Total (including numbers given separately under (*b*). 8

(*b*) With State assistance under the Housing Acts :—

(i) By the Local Authority 8

(ii) By other bodies or persons ... ... Nil.

1. *Unfit Dwelling-houses.*

Inspection—(1) Total number of dwelling-houses inspected for housing defects (under Public Health or Housing Acts) 40

(2) Number of dwelling-houses which were inspected and recorded under the Housing (Inspection of District) Regulations, 1910, or the Housing Consolidated Regulations, 1925 6

(3) Number of dwelling-houses found to be in a state so dangerous or injurious to health as to be unfit for human habitation 9

(4) Number of dwelling-houses (exclusive of those referred to under the preceding sub-head) found not to be in all respects reasonably fit for human habitation 20

2. *Remedy of Defects without Service of formal Notices.*

Number of defective dwelling-houses rendered fit in consequence of informal action by the Local Authority or their Officers 6

3. A. Proceedings under section 3 of the Housing Act, 1925.

(1) Number of dwelling-houses in respect of which notices were served requiring repairs ... Nil.

(2) Number of dwelling-houses which were rendered fit after service of formal notices :—

(*a*) By owners ... ... Nil.

(*b*) By Local Authority in default of owners... Nil.

(3) Number of dwelling-houses in respect of which Closing Orders became operative in pursuance of declarations by owners of intention to close Nil.

B. Proceedings under Public Health Acts.

(1) Number of dwelling-houses in respect of which notices were served requiring defects to be remedied ... ... Nil.

(2) Number of dwelling-houses in which defects were remedied after service of formal notices :—

(*a*) By owners ... ... Nil.

(*b*) By Local Authority in default of owners... Nil.

C. Proceedings under sections 11, 14, and 15 of the Housing Act, 1925.

(1) Number of representations made with a view to the making of Closing Orders 5

(2) Number of dwelling-houses in respect of which Closing Orders wre made 1

(3) Number of dwelling-houses in respect of which Closing Orders were determined, the dwelling-houses having been rendered fit ... ... Nil.

(4) Number of dwelling-houses in respect of which Demolition Orders were made 3

(5) Number of dwelling-houses demolished in pursuance of Demolition Orders 3

JOHN R. PRYTHERCH.

Sanitary Inspector's Report.

WATER SUPPLY.

The water supply when supplied direct from the springs proved to be wholesome but inadequate, little use was made of the Storage Water in the Reservoir, as when stored, it became unpalatable.

DRAINAGE AND SEWERAGE.

Drains in the town area have been connected to the Main Sewer and further facilities are given by the recent extension of the Sewers. The Settling tank receiving the sewerage from the town is cleansed monthly and the overflow discharges into tidal waters.

CLOSET ACCOMMODATION.

The number of Closets which remain on the Conservatory System is 176, 80 of these are situated in the rural area, and are not within the reach of the Sewer, one privy has been converted into a water closet, bringing the number of water closets remaining to 289.

SCAVENGING.

The removal of House Refuse and Scavenging is undertaken by the Council. The refuse is deposited in a tipping ground suitably situated, at a distance of about 2 miles from town. The question of providing better and more efficient arrangements for the cleaning of Earth Closets is being considered by the Council.

FOOD.

Samples of milk suspected to have been adulterated are forwarded to the proper quarter for the purpose of analysis. Samples forwarded during the year proved to be satisfactory. Speaking generally the cow sheds in regards to construction and utility are of inferior type, but the arrangements for distribution are adequate. No licences were granted under special designations. The number of registered and licenced slaughter-houses in 1920 were five with one other in use. The number in December, 1925, are five in use, as on the recommendation of the officials, no licenees were granted, and hitherto no action has been taken.

HOUSING.

The general housing conditions of the district are comparatively good, but fall below the standard in quarters where the average rental is 2/- to 3/- per week. The shortage of houses in the main is due to a desire by the inhabitants in the above areas for alternative and better accommodation, if such could be provided at a moderate rent. There are also instances of shortage among artisan dwellings, which the Council hope to remedy by the erecting of new houses.

OVERCROWDING.

Overcrowding is chiefly amongst the labouring classes, which during the latter years has been materially reduced. 15 cases of overcrowding were recorded in the year 1922, with a total deficiency of 7,800 cubic feet in space. There were remaining at the end of December five cases, with a total deficiency of 2,750 cubic feet.

Two extreme cases of overcrowding were dealt with during the year by the Local Authority, by the provision of alternative accommodation.

INSPECTION OF AREA.

The number of inspections during the year were 400, the nature of which were the inspection of food places, including slaughter-houses and the general inspection of premises. The number of informal notices served during the year were 30, and these were complied with, also one Statutory Notice which was served was complied with.

I am, Sir,

Your obedient Servant,

T. K. JONES,
Sanitary Inspector.

LLANGEFNI WATER SUPPLY.

Report of the Consulting Engineers
(Messrs. Henry Adams & Sons),
upon the Llangefni Water Supply,
for the Llangefni U.D. Council.

MAY 1925.

Monday, 4th May, 1925.

To the Chairman and Members of the
Urban District Council of Llangefni.

Gentlemen,

LLANGEFNI WATER SUPPLY.

We have pleasure in submitting our report upon the purification and augmentation of the Water Supply of your district in accordance with your instructions.

Our Mr. Henry C. Adams visited Llangefni on Wednesday, 15th April and was accompanied on his inspection of the existing Waterworks by your Medical Officer, Dr. Prythereh, and your Surveyor, Mr. T. Kyffin Jones, from both of whom he obtained a great deal of information.

CAE GARW SPRING.

The water was standing in the collecting chamber at a level very near to the surface of the ground and about a foot above the top of the rose on the 3 inch cast iron outlet pipe. It appears probable that instead of this being a true " spring " it is more in the nature of a " dip-hole," and that the surrounding ground is full of water to the same level. This means that there is a very large quantity of water which can be tapped for use. The quantity would undoubtedly be less in the summer, but we are informed that even in dry years the level stands at a few inches only below the top of the rose, so that there would still be an appreciable amount of water in the ground, which could be utilised to a fuller extent than at present by lowering the pipe slightly. The fact that the water is standing well above the inlet to the pipe indicates that the pipe is discharging to its full capacity ; unless of course, there is some obstruction in the pipe. The present pipe is restricted in its conveying capacity by the flatness of the hydraulic gradient at the upper end. It is useless therefore to collect more water at the source unless pipes of a larger diameter are substituted to enable it to be carried off.

Pen-lan Spring.

The conditions at Pen-lan are practically the same as at Cae Garw, excepting that the water in the ground appears to be utilised to a somewhat greater extent; and the same observations apply. The cast iron pipe from here to the reservoir is 4 inches diameter.

Reservoir.

The reservoir is an artificial one, square in shape, formed by excavating the ground at the top corner and embarking it on the lower sides. In 1914 it was lined with concrete, reputed to be 9 inches thick. The concrete visible on the sloping sides is in good condition except for a few slight cracks, running from top to bottom of the slope and such as usually occur when a large expanse of concrete is laid without joints. We are informed that the reservoir is emptied twice a year when the mud is cleaned out and any cracks that exist in the bottom and sides are cut out and repaired, and yet the reservoir leaks such that when it is filled to a depth of only about 4 feet heavy loss occurs, to the extent of about 15,000 gallons per day, and when the depth is increased to 6 or 7 feet the water runs out as fast as it runs in, the leakage probably being from 40,000 to 50,000 gallons per day. The capacity of the reservoir is about 816,600 gallons if filled to the nominal working depth of 9ft. 9in. for which it is designed, whereas it holds only about 200,000 gallons when filled to the present normal working depth of 4 feet. The bottom is said to sound hollow in places and this is probably due to the leaking water carrying with it soil from beneath the reservoir as it escapes to open ground. We do not attach much importance to the cracks in the floor of the reservoir as potential causes of excessive leakage, for several reasons. We believe the cracks are not particularly large and as the floor is covered with a fine silt after a few days use, such silt would be carried into the cracks and would fill them up, thus tending to retard leakage. Another fact is that the rate of leakage through any definite hole or crack varies as the square root of the depth of water above the hole, that is to say if the depth were doubled the leakage would only be increased about 40 per cent. Now it is established that in filling up the reservoir the leakage increases at a far greater rate than this therefore it follows that the filling up is accompanied by an enlargement of the holes through which the leakage is occurring. The most significant crack, and the only one whose size could be materially affected by the increase of pressure due to added depth of water is the horizontal one which extends more or less all round the reservoir in the vertical wall at the foot of the slope and a few inches below the point of junction. There are two ways in which this joint could open on an increase in the depth of the water, first by a bodily settlement of the whole of the floor and secondly by the yielding of the sloping sides, turning as on a pivot at the back of the crack. Of the two theories we favour the latter because if there were settlement of the floor we should expect to find the crack much nearer the bottom, and if the floor were depressed by the added water it would not be so likely as the bank to recover its position when the water was removed, and the crack once mended would remain tight for some considerable time. If our suggestion is correct the design of the concrete lining is defective and its remedy a matter of difficulty.

PURITY OF WATER.

We have examined two analyses of water which you have had made, one of water taken from the reservoir and the other from a tap in the town. Both of these analyses show the water to be very unsatisfactory, we understand, however, from your Medical Officer that there is no complaint with regard to the purity of the water as it comes from the springs, and that it is only after the water is in the reservoir that it acquires an earthy taste and contains animalculae. Owing to the shallow depth of water, samples from the reservoir would be taken very close to the silt which covers the floor and would be affected thereby. Further the supply to the town is being taken through the lowest draw off, which is below the general level of the floor, hence the silt is swept off the floor into the pipes with the water, with the result that its quality is far worse than the circumstances warrant. It is said that the foreign matter in the reservoir, which is the cause of the complaints, principally enters through the cracks. It is a better policy to prevent pollution rather than to embark on steps to counteract the effects of it, and if the water at the springs is of good quality, as suggested there would not appear to be any necessity to purify it. Having regard however to the shallow depth from which the water is derived and the nature of the gathering ground we suggest that any new permanent works should be so designed, if practicable, that filters could be inserted at a later date, if found desirable. With an open reservoir there is always a certain amount of pollution from the air, birds, etc., but it is very small in amount and we think the fine guage screens, which we recommend should be retained, and the beneficial effect derived from lengthy storage of the water, will afford all the protection necessary.

We suggest that at the earliest opportunity three further samples of the water should be taken for analysis, one from each spring and one from the water entering the reservoir. The latter being to ascertain if any harm occurs to the water through leaky pipes, etc. between the springs and the reservoir. It is very desirable in the case of the two samples from the springs that the examination should comprise a bacteriological analysis as well as a chemical one. The analyst should be asked to report upon the results which he obtains, and from his reports will be gathered whether filtration is, or is not, a necessity at present.

PRESSURE.

It appears that the floor of the reservoir is only about 25 ft. above the roadway at the extreme Eastern end of the main and only about 10 to 15 ft. above the road near Tan-y-graig, to which the main may be extended before long ; while the floor of the reservoir is 2 feet below the floor of the County School. It is obvious that under present conditions water cannot be supplied to those places, and others at nearly the same elevation, at a satisfactory pressure. It is not practicable to construct the main service reservoir at a much higher elevation, and any benefit that might be derived by a change of site would not be commensurate with the cost. The most satisfactory course would be to erect an elevated tank, or water tower, near Felin Graig and to feed into it, at night, direct from Cae Garw Spring During the day this tank would supply the higher parts at the East end of the district, while Cae Garw Spring would feed into the present reservoir. In such case the County School would be best served by storage cisterns at the top of the building which would be filled up at night.

QUANTITY OF WATER.

We believe the quantity of water required at the present time averages 30,000 gallons per day. Gaugings taken by your Surveyor on 18th April, 1925, showed that 64,800 gallons per day were being discharged into the reservoir. Measuring the flow from each spring separately the delivery was found to be :—

Cae Garw	23,500 gallons per day.
Pen-lan	43,200 gallons per day.
Total	66,700 gallons per day.

That this is in excess of the flow when both springs are running together tends to confirm our suspicion that an appreciable loss in the discharging capacity of the pipes occurs through them being brought together into a joint pipe of 4 in. diameter at some distance above the reservoir.

MAINS.

We are informed that the cast iron mains throughout the town are in a clean and satisfactory condition, and that any trouble from corrosion and incrustation that exists is confined to the private house services which are of galvanized iron.

SUMMARY.

We are of opinion that the existing waterworks can be put into a thoroughly satisfactory condition and should meet the needs of the town for many years. In view of the possibility of an auxiliary supply being wanted at some future time we carefully examined the maps of the districts and inpected some portions of it. We are satisfied that a large quantity of water can be obtained in the neighbourhood of Rhosmeirch at an elevation to command the whole of the town, and that such water could be delivered into your present system without requiring special alteration beyond that which is necessary at the present time. This suggested additional supply is entirely a matter for the future but it shows you need have no anxiety as to a suffiency of water whatever developments may take place. Neither the present nor the proposed scheme would supply the outlying population in the elevated Northern portion of your district.

RECOMMENDATIONS.

CAE GARW SPRING.

To add to the water obtainable from this source we recommend that collecting drains be laid North and South from the spring to intercept the water coming from the high ground, over a wider area.

CAE GARW FEED PIPE TO RESERVOIR.

We recommend that this 3 inch cast iron pipe line should be taken up and larger pipes, possibly 5 inch for part of the distance, be laid to the reservoir, with a byepass connecting direct to the supply main to the town. This pipe would be kept entirely separate from the 4 in. pipe from Pen-lan. This separation would have the effect of increasing the discharging capacity of the Pen-lan feed pipes. The discharge ends of the pipes at the reservoir should be fitted with float valves which would shut off the supply when the reservoir was full, and avoid unnecessarily draining the ground. Sluice valves should be inserted so that the Cae Garw water could be put direct on to the town at night, thus increasing the pressure, and a reflux valve should be inserted to prevent it escaping into the reservoir upwards through the present main supply pipe. The 3 inch pipes taken up could be stocked and re-used for extensions of the mains in the town, if and when required.

PEN-LAN SPRING.

The chamber should be cleaned out as there appears to be an accumulation of silt. We think if the Cae Garw work is carried out it will be unnecessary to do anything further at present in connection with Pen-lan spring.

RESERVOIR.

We are confident that the reservoir can be made watertight although it will be an expensive matter. We recommend that the cavities which probably exist in the soil underneath the floor of the reservoir should be filled up as far as possible with cement grout forced in through holes made for the purpose in the concrete floor.

The bank is probably sodden by water which leaks through the horizontal crack running round the reservoir at the foot of the slope. It is desirable that before any repair work is done the reservoir should remain empty for about a month to enable this water to drain off and for some of the inevitable shrinkage to take place. Provision could be made for temporarily maintaining the supply of water to the town by feeding direct from the springs or from the proposed water-tower hereinafter referred to.

We advise covering the floor and a portion of the sides, extending over the angle at the foot of the slope, with expanded metal embedded in concrete in order to guard against any further cracking, should settlement occur. We also advise a lining of bitumen sheeting, covered with a layer of, say, 3 inches of concrete as a protection from mechanical damage, in order to avoid any possibility of laekage through porous concrete or by movement of any portion of the structure.

The foregoing proposals would give a new lining of a total thickness of about 6 inches and would reduce the capacity of the reservoir to a corresponding extent which would not be serious.

WATER TOWER.

In order to provide a supply of water throughout the day at adequate pressure for the higher parts to the East of the town we recommend the construction of a water tower near Felin Graig as previously described. The tank should be at a height of about 30 feet above the ground and contain about 100,000 gallons, or 3 days supply. It would be advisable to form the tower and tank in reinforced concrete. This elevated tank would materially augment the quantity of water available for fire extinguishing purposes.

MEASURING CONSUMPTION OF WATER.

We recommend that a water meter be installed on the pipe line between the reservoir and the town. This would not only give definite information regarding the consumption of water but would readily enable leakage from the mains to be detected.

FINANCE.

It is not feasible to give an estimate without working out our proposals in a much more detailed manner than is practable at the present stage. Our impression is that the work would cost somewhere in the neighbourhood of £8,000. made up approximately by mains and pipes £3,000, repairs to reservoir £2,000, and water tower £3,000.

We have the honour to remain,
Your obedient servants,

HENRY ADAMS & SONS,
M.M. Inst. C.E.

T. H. HUGHES, Esq.,
Clerk to Llangefni U.D.C.,
Fir Grove, Menai Bridge,
Anglesey.